

NASA CR-

152503



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April 20, 1977

(NASA-CR-152503) RESEARCH OF MAGNETOSPHERIC PHYSICS PHENOMENA USING SOUNDING ROCKETS
Semianual Status Report, 1 Jul. 1976 - 31
Dec. 1977 (Minnesota Univ.) 4 p HC A02/MF
A01

N77-23649

Unclassified
CSCL 04A G3/46 30797

Edward E. Bissell
Chief Engineer for Operations
Sounding Rocket Division
NASA/GSFC
Greenbelt, Maryland 20771

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Dear Mr. Bissell:

This is the Semi-Annual Status Report covering work performed on grant NSG 5088 (Electron Echo IV, 21.027UE and Electron Echo V, 27.003UE) during the period 1 July, 1976 through 31 December, 1977. Since Dr. J.R. Winckler is presently on sabbatical, we are writing this report in his absence.

During this period, data analysis has continued on Echo IV, which was successfully launched from Poker Flat Research Range, Fairbanks, Alaska on 31 January, 1976. Efforts have been coordinated with the Echo IV associate investigators from the University of Alaska and the University of New Hampshire. The data analysis has included an extensive study of the electron accelerator beam, detector data correlations with the electron beam injections, and the study of about 30 onboard detected echoes.

Dr. J.R. Winckler, while on his sabbatical in the western United States and Europe, has given numerous talks and exchanged much information about the Echo IV results.

During this period Echo V development continued. The new design of the electron gun and circuits was completed and an increased current (200 milliamps at 40 kilovolts) gun was successfully tested. Also during this time a preliminary flight gun program was designated to incorporate four of these increased current guns. Layout and design work on the proposed payload was also extensively pursued. In August the Echo V mission vehicle was changed from an Aries (24.008UE) to a Nike Black Brant VC (27.003UE). Due to this change a second Echo V Pre-PIC was attended on 21 October, 1976, with an experimenter's data package presented.

In November the feasibility and scientific merits of flying a separated payload with experiments and telemetry on both sections was investigated. On 17 December 1976 a new experimenter's data package was sent to Sounding Rocket Division (SRD) with this new separated payload design. This option of flying a separated payload was later rejected in favor of a single payload due to weight limitations of the Nike Black Brant VC.

The Echo V integration at SRD was scheduled to start the first week in November, 1977, with the launch window at Poker Flat Research Range set as the first week in February, 1978.

During this period there have been no publications relating to the Echo Experiment; however, a complete Echo bibliography is included for reference.

The Research and Technology Resume (NASA form T43) will be completed by Professor J.R. Winckler upon his return in June.

Sincerely,



James E. Steffen
Research Fellow



Kenneth N. Erickson
Adjunct Associate Professor

JES/KNE/j1
cc: Virginia Kendall ✓
Code 250.5 GSFC

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